modern teacher

DIGITAL CONVERGENCE

The Path Toward the **K-12 Modern Learning Environment**

MAY 2016

The K-12 Challenge

Across the United States, the K-12 school system is undergoing fundamental change in the shift toward the modern learning environment. School leaders are now collaborating with entrepreneurs and researchers to redesign existing school structures. Meanwhile, teachers are connecting locally and nationally with other educators to share resources, strategies, and advice on how to use technology effectively in the classroom. Students are collaborating with classmates and other learners to create knowledge in ways never before possible. Using technology, these stakeholders are removing traditional boundaries in time and space, allowing learners greater control over when, where, and how they learn.[1]

Technology has long disrupted industries to create a greater focus on the consumer. A recent example is Uber, which has fundamentally changed how consumers think about transportation by removing traditional constraints to information exchange. Through its digital platform, Uber has connected consumers to a vast network of producers that can deliver services unique to them, when and where they need it. Before Uber, transportation was controlled by taxi services, which determined the flow of information and services. The advent of new technology caused this balance to shift, offering consumers greater awareness, resources, and power in the consumer-producer dynamic. Like consumers, students of K-12 schools are discovering similar benefits of digital tools as they gain unprecedented access to resources and information constrained by traditional learning models. Technology's disruptive impact is creating the need to redefine existing roles and structures in the shift toward student-centered learning.

Digital Convergence is the fundamental change needed in the K-12 school system—both at the national and school district levels. At the national level, Digital Convergence is the intersection of people and ideas as they seek a unified approach to integrate technology into classrooms and use it to transform the student learning experience. At the school district level, Digital Convergence is the successful intersection of five major categories of work through which Digital Convergence can successfully occur—Leadership, Instructional Models, Modern Curriculum, Digital Ecosystem, and Professional Learning—to redesign existing infrastructure and resources to support modern learning.

[1] "The NMC Horizon Report: 2015 K-12 Edition." *The New Media Consortium.* (2015). http://cdn.nmc.org/media/2015-nmc-horizon-report-k12-EN.pdf

Background

Technology has long been a part of the K-12 classroom. Computers were first introduced to classrooms in the 1980s and 90s.[2] Early computer teaching programs focused on the development of basic cognitive skills, but improvements in hardware and software allowed students to focus on more advanced cognitive tasks such as critical thinking. The transforming role of technology has continued, with significant advancements in recent years. The development of new hardware, software, and capabilities—from tablets and smartphones to cloud-based computing—has changed the learning experience by extending it beyond the classroom, providing access to additional learning, and allowing learners to study at their own pace and in ways they prefer.

Digital resources have provided visibility across the K-12 school system and have connected geographically dispersed stakeholders. Leaders, teachers, and students are using technology to share information and knowledge at an unprecedented level and scale.[3] Teachers are using social media, blogging, and other technology to build personal learning networks that allow them to collaborate and seek help with lesson planning, curriculum development, and more. Students are using programs such as Google Apps and Skype to interact in and out of the classroom—with classmates and other learners. Students are even assuming the role of teacher, as demonstrated by the range of students who are now creating and posting instructional videos to educate other learners.[4] Superintendents and other administrators are joining "education innovation clusters" to collaborate with innovators, researchers, and entrepreneurs who are knowledgeable in technology integration. Across the country, K-12 stakeholders are working together to rethink the entire school system.

Despite significant progress, barriers remain to Digital Convergence.

Despite significant progress, barriers remain to Digital Convergence. These barriers are created by the implementation of single-point solutions, which attempt to address complicated problems (student achievement generally being the most common) by purchasing a product or service from a single vendor. Examples include the purchase of laptop computers, access to curriculum, professional learning from a local nonprofit, or a learning management system. Purchasing only one of these solutions, or purchasing them all and leaving it to the vendors to manage separately result in significant barriers to Digital Convergence. These single-point solutions often target some but not all categories needed for Digital Convergence, fail to address the categories adequately, or disrupt the entire process of Digital Convergence.

[2] Delgado, A. J., Wardlow, L., McKnight, K., & O'Malley, K, "Educational Technology: A Review of the Integration, Resources, and Effectiveness in K-12 Classrooms," *Journal of Information Technology Education: Research,* 14 (2015): 297-416, http://www.jite.org/documents/Vol14/JITEv14ResearchP397-416Delgado1829.pdf

[3] "The NMC Horizon Report: 2015 K-12 Edition." *The New Media Consortium.* (2015). http://cdn.nmc.org/media/2015-nmc-horizon-report-k12-EN.pdf

[4] Joddie M. "Students Teaching Students: Adding Mixed Numbers." *Youtube*, (2014). https://www.youtube.com/watch?v=kXHGZKXlID-Q&list=PLYJAYPjnSk3KJrMg3huszfRBGjq1TPjTQ

The implementation of single-point solutions is a short-sighted response to common challenges school districts face. School leaders often implement technology initiatives and devices without establishing a shared vision for the initiative and without gaining buy-in from community members, teachers, and students, which may ultimately create resistance in using technology in the classroom. This response is facilitated by the structure of school districts, which primarily relies on top-down changes from administrators.[5] Additionally, instructional models and curriculum remain designed for the traditional learning model, which makes using technology difficult and fails to leverage the full capability of technology, such as the ability to make learning more personalized. Another response by school districts is to implement devices without considering interoperability, thereby creating a fragmented and frustrating learning experience. Lastly, professional learning often fails to educate teachers sufficiently and continuously to keep pace with technology, especially as the role of the teacher expands to embrace new strategies and pedagogies. Research shows that many pre-service training programs do not address how to incorporate technology effectively into teaching, and on-the-job training often focuses only on the features and functions of equipment.[6]

The implementation of single-point solutions is a short-sighted response to common challenges school districts face.

Single-point solutions are ultimately a result of the lack of coordinated foresight, participation, and resources among all stakeholders affected by technology integration. Nowhere is this more apparent than between school districts and their schools. As school districts continue to struggle with managing budgets, many schools must make their own purchasing decisions as they convert from analog to digital. These schools often purchase solutions that address school-specific needs but are not supported at the district level, ultimately resulting in a fragmented learning network. This issue is further enhanced by the arrival of new and innovative education technology, which has increased the need for informed choices when purchasing digital resources.[7] The only answer to single-point solutions is a unified approach to the selection, implementation, and integration of modern learning solutions.

[5] ibid

[6] ibid

[7] "Expanding Evidence Approaches for Learning in a Digital World" *U.S Department of Education, Office of Educational Technology,* (2013), http://tech.ed.gov/files/2013/02/Expanding-Evidence-Approaches.pdf

Digital Convergence: Overcoming Single-Point Solutions

Digital Convergence follows a dynamic, iterative journey unlike the linear path of a single-point solution. As one driver of Digital Convergence changes, the remaining drivers must be addressed and revised to sustain a uniform solution. The interrelation among the drivers of Digital Convergence is perhaps best described by Jay Forrester and Peter Senge, who developed a language in the form of archetypes to describe how systems interact as solutions are applied to them.[8] Forrester and Senge's findings illustrate the need for a solution that solves fundamental problems and provides foresight to the people implementing them. Because a complex system contains a myriad of interrelations among system components, the input on the system is dependent on numerous conditions. Comprehensive solutions that facilitate Digital Convergence allow coordination among components and address all conditions required to make the solution successful. These dynamic solutions encourage stakeholders to view their effect on the system as a whole, rather than viewing their effect on an isolated part of the system.

Additionally, Digital Convergence ensures that digital assets provide sustainable value over time by making sure that the solution continues to adequately meet the needs of each part of the system. This prevents the solution from becoming obsolete for failing to integrate with one part of the education system.

Digital Convergence is not an end point, rather a state that is continuously changing amid changes in technology and each of the five drivers. The highly dynamic nature of Digital Convergence necessitates that leaders establish an assessment process or framework to measure their progress. It also requires that leaders leverage technology to help track and anticipate barriers to Digital Convergence, such as using predictive analytics to understand trends and allocate resources to effectively integrate technology.

[8] William Braun. "The System Archetypes," February 27, 2002, http://www.albany.edu/faculty/gpr/PAD724/724WebArticles/sys_archetypes.pdf

Digital Convergence: The Five Drivers Defined

It is important for K-12 superintendents, chiefs, principals, and teachers to understand the five drivers of Digital Convergence and how they are interrelated.

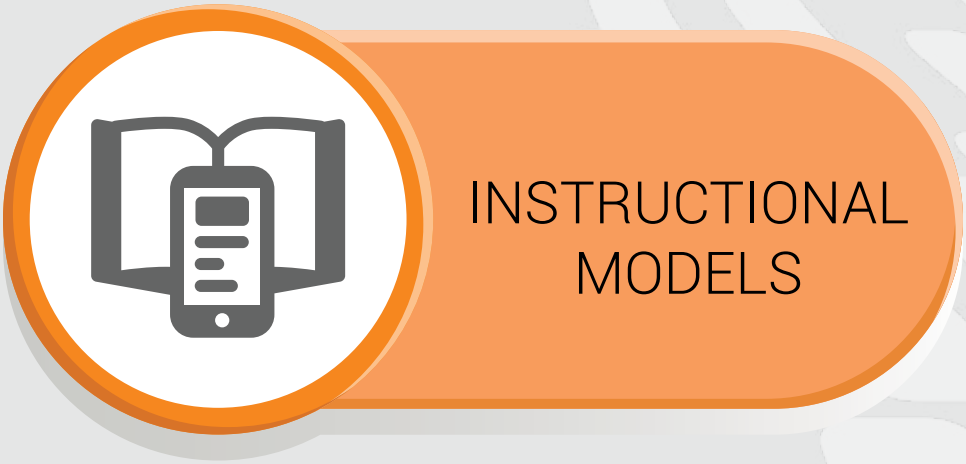
1. Leadership

Reaching Digital Convergence begins with leadership. Superintendents, cabinet members, and other key stakeholders must work collaboratively to set a shared vision for the transition to the digital classroom. Once established, leadership must bring the vision to internal stakeholders and the community to gain participation and buy-in. This entails convincing community members to envision classrooms differently from what they remember, as well as assuring teachers that more technology will not lead to more complexity.[9] Leadership must also work collaboratively with stakeholders to develop a Digital Convergence plan, secure funding for long-term technology adoption, and create adequate training and support for sustainable and effective technology adoption.

[9] Kacy Zurkus. "How emerging technology is changing K-12 classrooms," *CIO*, August 27, 2015, http://www.cio.com/article/2976878/education/how-emerging-technology-is-changing-k-12-classrooms.html

2. Instructional Models

In addition to effective leadership, reaching Digital Convergence also entails selecting, designing, and implementing instructional models that leverage technology and best teaching practices effectively. Unlike the traditional model centered on teacher lectures, blended learning offers a revolutionary paradigm that uses digital resources to drive student engagement, participation, and critical thinking, as well as enables students to benefit from the accessibility of online resources and learning methods. Teachers, curriculum writers, and other stakeholders must work together when determining instructional models, ensuring they match the shared vision and Digital Convergence plan established by leadership.



3. Modern Curriculum

Also important to Digital Convergence is redesigning existing curriculum to incorporate digital content within the instructional framework. Creating modern curriculum requires curriculum writers, teachers, and other stakeholders to select appropriate digital content that fits the chosen instructional model, shared vision, and Digital Convergence plan. One school district provides an example of curating digital content to create a modern curriculum. The district chose to replace paper textbooks with online, open-source textbooks that allowed teachers to add or modify content to suit their instructional needs, including linking to videos and other resources.[10]

[10] Wylie Wong. "How to Transition from a Print to Digital Curriculum," *EdTech*, July 3, 2013, http://www.edtechmagazine.com/k12/article/2013/07/how-transition-print-digital-curriculum

4. Digital Ecosystem

With the prevalence of devices such as tablets and smartphones, stakeholders must collaborate to design an effective digital ecosystem. The digital ecosystem requires careful consideration and planning around the type of devices to implement and how they can be leveraged together, as well as how those devices will be supported by adequate infrastructure.[11] As an example of a digital ecosystem, one school district provided students with tablets and digital microscopes for a biology experiment. Students used the tablets to take pictures outside, and the digital microscopes to analyze the images. The tablets and digital microscopes were used together to advance knowledge in ways not possible in a traditional classroom setting.[12] Ensuring that the digital ecosystem is fully integrated and supportive of hardware and software brings the school district one step closer to Digital Convergence. However, stakeholders must build a digital ecosystem that fits the district's shared vision, Digital Convergence plan, instructional model, and modern curriculum.

[11] ibid

[12] ibid

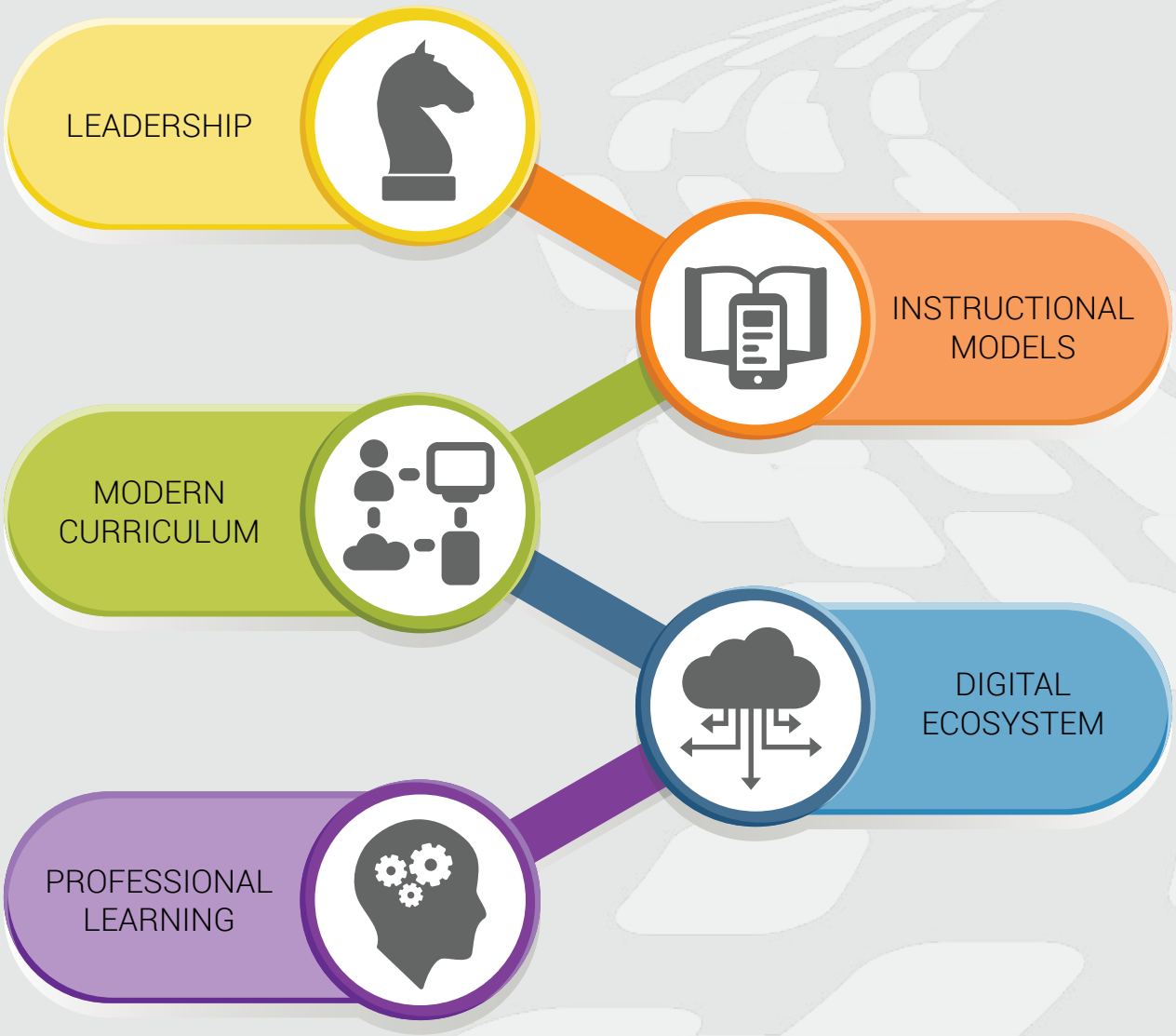
5. Professional Learning

The fifth and final driver to reach Digital Convergence is Professional Learning. Teachers need education on how to use the chosen technology, and in the context of the instructional model and modern curriculum. Beyond training teachers on the features and functions of technology tools, professional learning must empower teachers to use those tools in new and impactful ways.[13] Modern educators require instruction on when best to use technology, whether in class or at home, and how best to use it during their daily interactions with students. Teachers should also receive education on how to move from lecture-driven to student-centric pedagogy, in which teachers offer guidance and allow students to drive learning.

[13] Arlene Borthwick and Melissa Pierson. *Transforming Classroom Practice: Professional Development Strategies in Educational Technology, International Society for Technology in Education*, 2008, http://www.iste.org/images/excerpts/prodev-excerpt.pdf

Digital Convergence: The Path Forward

Reaching Digital Convergence is the key to fundamentally redesigning the learning experience for the modern age. Currently, the implementation of single-point solutions results in a fragmented learning network in which teachers and students suffer to make the transition from traditional to digital learning, missing out on the opportunity for improved outcomes, engagement, and a new paradigm that fosters the creation of knowledge versus the acquisition of it. For districts and schools to begin leveraging technology for the better, they must work toward Digital Convergence with a comprehensive approach that involves all stakeholders at all phases of technology integration. Only then can the industry reach Digital Convergence as a whole and reap the benefits of an entirely collaborative, transparent, and integrated system.



About Modern Teacher:

Modern Teacher partners with districts to support the transition from traditional classrooms to modern learning environments. We are an educational technology company designed to provide a research-based methodology for Digital Convergence in education, and we've created a technology-enabled solution to support districts in leveraging today's tools across K-12 classrooms. At Modern Teacher, we've assembled a network of like-minded professionals dedicated to supporting teachers in today's highly connected, digital world.

Contact Us:

4600 S. Ulster St.
Suite 1050
Denver, CO 80237
720-600-0203
www.modernteacher.com

modern teacher